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MED

Bleeding I

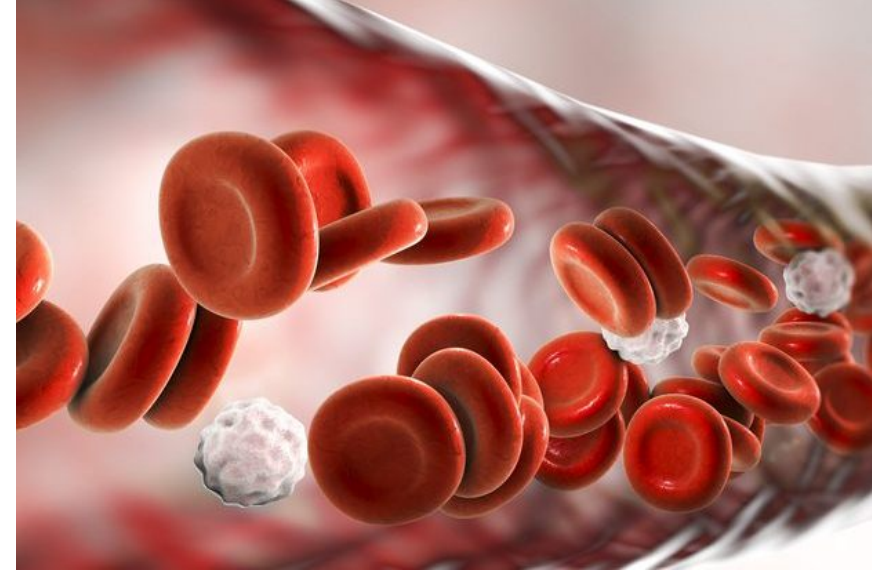
Lukáš Dadák

Learning goals

- Student will learn the types of bleeding.
- Student will learn about the use of pressure bandage and tourniquet.

Blood

- The content of the cardiovascular system
- Blood volume 4.5 - 6 l of blood
(65 - 75 ml / kg body weight)



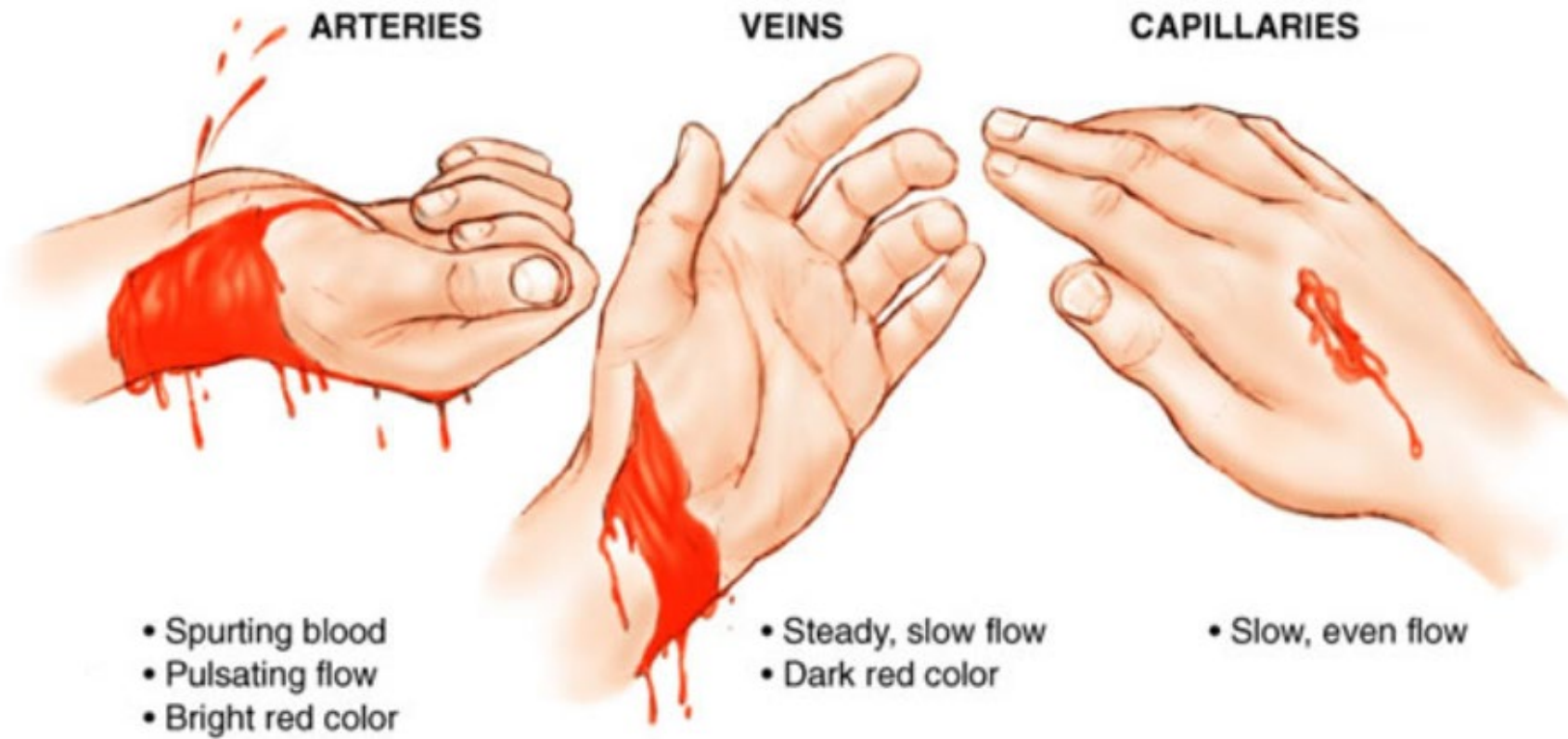
<https://www.healthindustryhub.com.au/biotechnology-news-trends/bluebirdbio-claims-first-approval-for-gene-therapy/>

Blood loss:

- Up to 15% of volume does not cause more serious changes
(minimal tachycardia, normal blood pressure, thirst)
- 15-30% of volume (tachycardia, tachypnea, narrowing of systolic-diastolic difference)
- 30-40% of volume (tachycardia, tachypnea, hypotension, prolonged capillary refill time)
- > 40% of the volume danger to life
(shock image, attenuation of consciousness, cold skin, BP not measurable)
- > 50% of the volume risk of death

Types of Bleeding

According to the vessel



Types of Bleeding

According to the vessel

- Arterial:
BRIGHT RED PULSING blood
- Venous:
DARK RED blood
flows slowly but continuously
- Capillary:
blood slowly seeps from the
wound

manifestation

- Internal
- External
- Traumatic
- Non-traumatic

The Most Important Division

Minor

- Capillary
- Venous

Use a patch or a simple gauze bandage.



<https://www.ns-healthcare.com/news/haemophilia-treatment-gene-therapy/#>

Masive

Life threatening

Call for help!

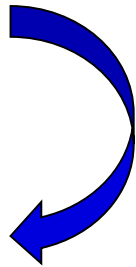
Must be stoped as soon as possible!



<https://emcrit.org/emcrit/severe-trauma-karim-brohi/>

Stop the BLEED

- B – Barrier
- L – Locate and Examine
- E - External Direct pressure
- E – Elevation
- D – Dressing



B – Barrier

- Your safety comes first!
- Avoid direct contact with foreign blood !!
- Protect yourself, use gloves!
- Improvised barrier aids:
 - a plastic bag,
 - a waterproof jacket.



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<https://myhealth.alberta.ca/Health/pages/conditions.aspx?hwid=zm6160>

L – Locate and Examine

- Try to calm the injured
- If necessary, remove clothing
- **Find a source !!**
- If there is a foreign object in the wound, do not pull it out.



https://sielearning.tafensw.edu.au/MCS/FirstAid_Ultimo/firstaid/lo/5262/5262_02.htm

E - External Direct Pressure

- Squeeze the bleeding wound directly (preferably through the dressing material, but do not waste time looking for it).
- If there is a foreign object in the wound, apply direct pressure around that object.
- If possible, you can ask the injured person to compress the wound with his free limb (this will give you time to provide additional aids for the final treatment)



<https://www.spokanevalleyfire.com/learn-to-stop-the-bleed/>

E – Elevation

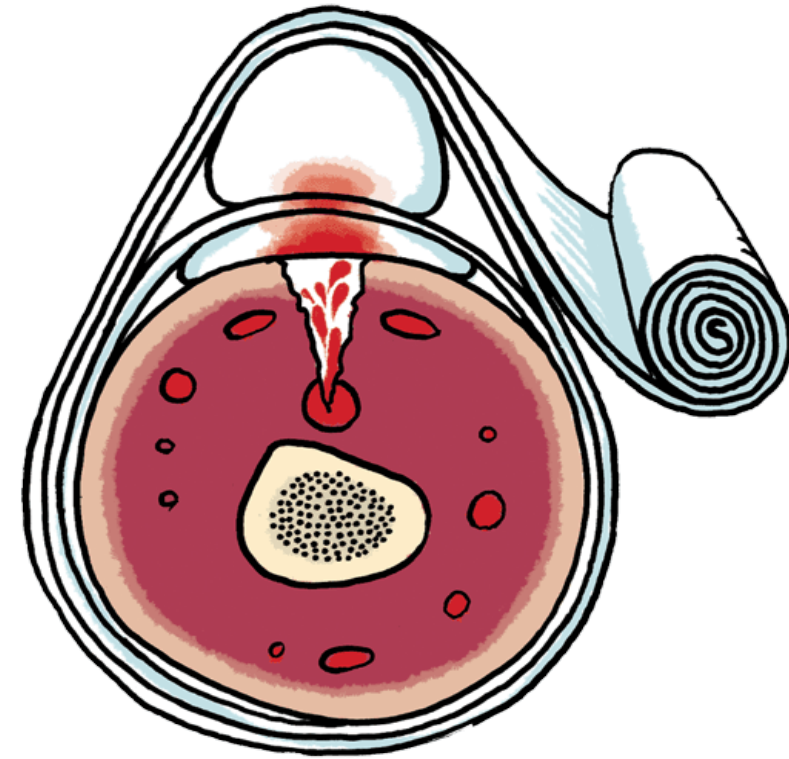
- Elevation itself has a small effect.
- Lay down or sit the injured person - prevention of fainting.
- Raise the limb above the level of the heart **after the final bandage.**
- Do not move fractured limbs.

D – Dressing

Applying a pressure bandage

Pressure bandage layers:

- cover layer (gauze, dressing material)
- pressure layer (undeveloped dressing package applied directly to the bleeding site)
- fastening layer (bandage wrapped under tension)



<https://mladyzdravotnik.cz/prvni-pomoc/obvazy/>

Pressure Bandage

- **Do not apply to a foreign body** in the wound or to an open fracture with arterial bleeding !!
 - in this case it is necessary to use a tourniquet and a sterile wound dressing
- **NEVER** take off pressure bandage when bleeding !!!!
 - attach another package and wrap and pull with another bandage

Tourniquet

- In case of life-threatening bleeding:
 - amputation
 - crushing of limbs
 - open fracture with massive bleeding
 - repeatedly massively soaked pressure bandage 3 or more times



Tourniquet

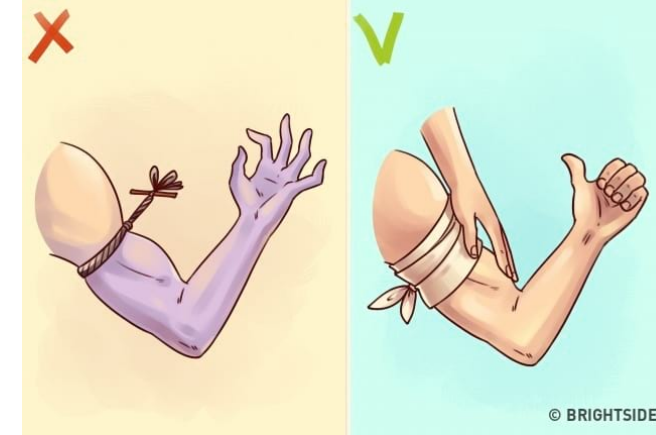
T. is attached :

- Through the clothes
- Above the site of injury
- On the limb:
 - Arm
 - Thigh
- Tighten until the injured area stops bleeding.

Record attachment time !

Do not attach:

- through the joints
- through foreign bodies in the wound
- through open fractures
- on the neck or torso



Tourniquet

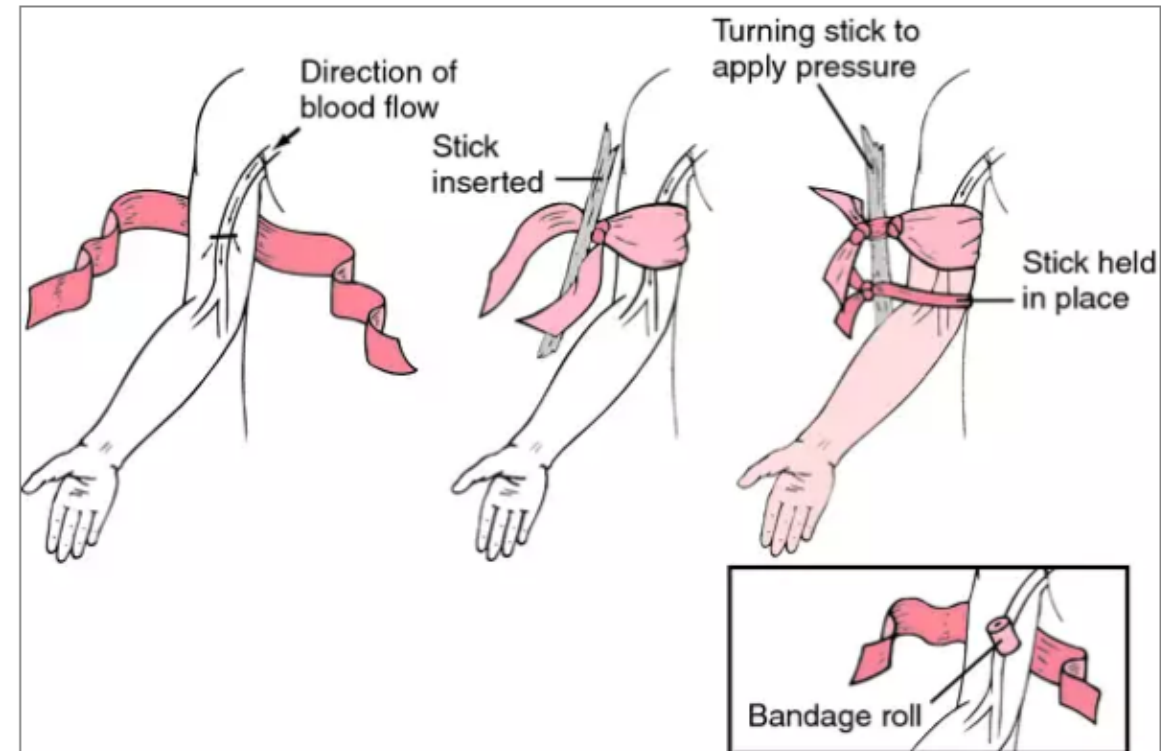
scarf, strip of **fabric**

- width at least 5cm
(never thin laces, strings)
- apply approx. 5cm above
the wound (close to the heart)

Solid object

- attach under the knot,
- tighten by turning firmly
- fix

Record attachment time !



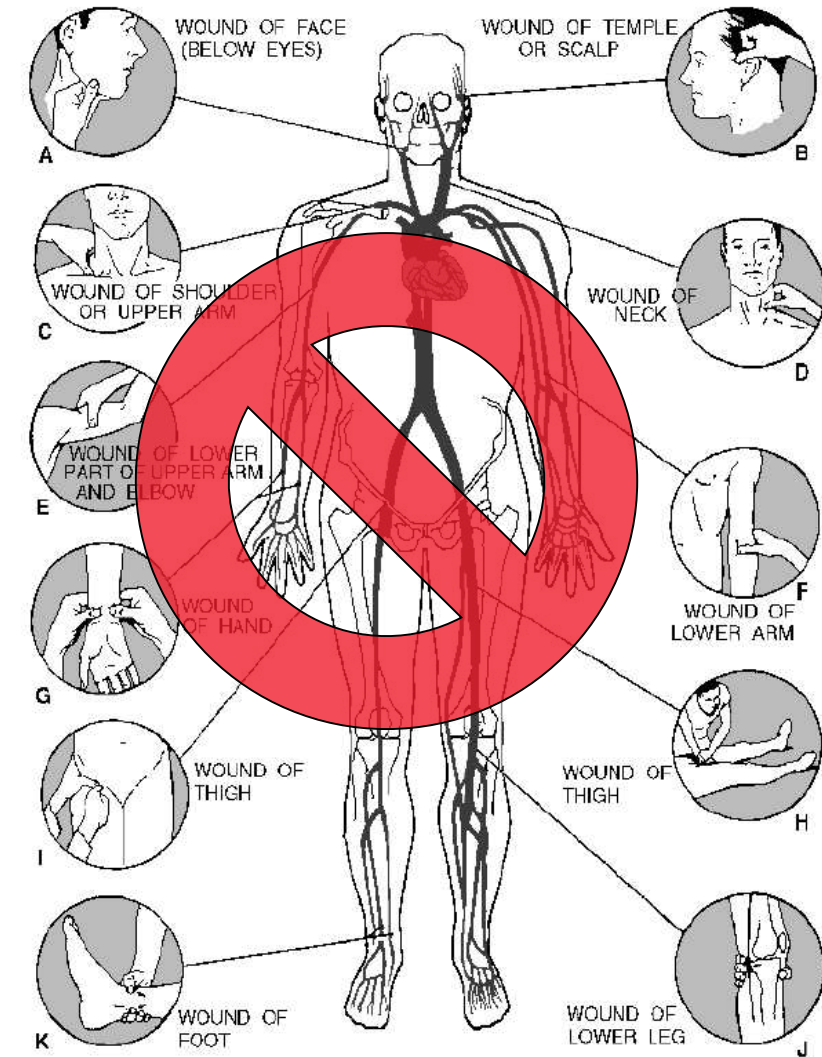
To apply a tourniquet for control of arterial bleeding from the arm: Wrap a gauze pad twice with a strip of cloth just below the armpit and tie with a half knot; tie a stick at the knot with a square knot. Slowly twist stick to tighten.

<https://medical-dictionary.thefreedictionary.com/tourniquet>

Pressure Points

Nowadays, a very controversial method of stopping bleeding.

- It is very difficult for a layman to find points at all.
- Pressure bandages or tourniquets work better.



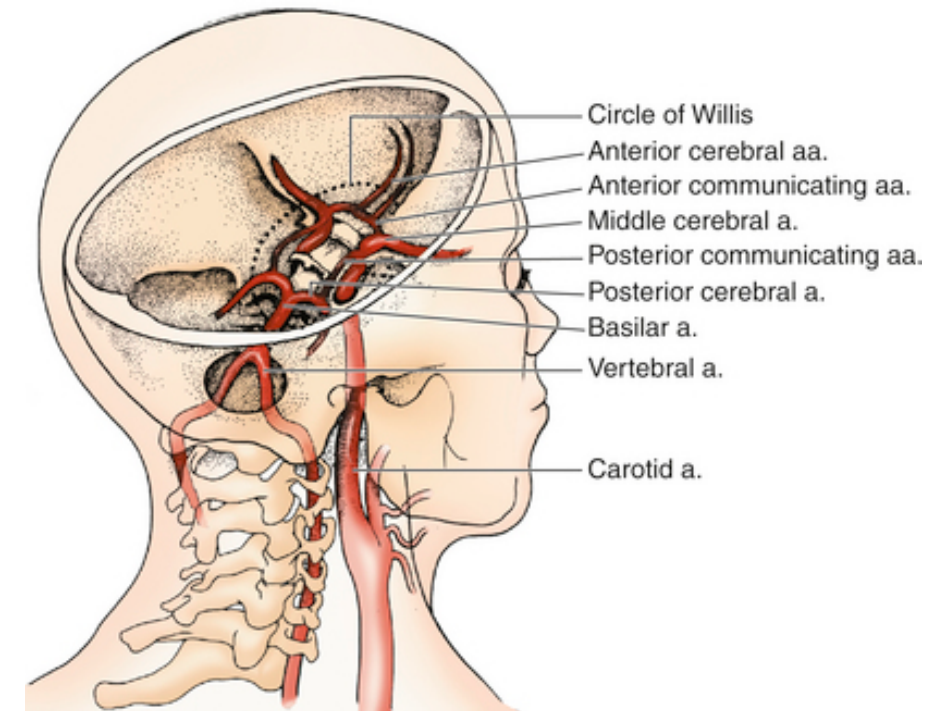
<https://www.survivalkit.com/blog/stop-bleeding-by-pinching-these-universal-pressure-points/>

Massive Bleeding from the Neck

- the artery bleeds from both ends
- the vein without flaps → risk of air intake into the heart → air embolism → SCA

FA:

- compression
- lying position, call EMS
- compression until EMS arrives



<https://radiologykey.com/normal-cerebrovascular-anatomy-and-collateral-pathways/>

Conclusion

External bleeding is stopped:

- Direct compression of vessels in a wound
- Applying a pressure bandage
- Loading a tourniquet

EMS is used for safe transport to the hospital.

Learning outcomes

- Student knows the types of external bleeding (according to blood vessels and severity).
- Student is able to describe the use of pressure bandage and tourniquet.
- Student justifies the positioning during massive bleeding from the neck.

Literature

- AUSTIN, Margaret, Rudy CRAWFORD and Barry KLAASSEN.
First aid manual: the Authorised Manual of St John Ambulance, St Andrew's First Aid and the British Red Cross. Revised 10th edition. London: DK, 2016. 288 pp. ISBN 9780241241233.

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